ment is illustrated. In step **161**, the abutment judgement value judgement part **57***b* calculates a magnitude of the fluctuation of the electric current. The fluctuation of the electric current corresponds to a variation range of the electric current. With reference to FIG. **5**, for example, the magnitude of the fluctuation of the electric current can be calculated by subtracting a minimum value from a maximum value at the interval TB from the time t**1** to the time t**2**.

[0154] With reference to FIG. **32**, subsequently, in step **162**, the abutment judgement value judgement part **57***b* judges whether or not the magnitude of the fluctuation of the electric current is less than a predetermined low fluctuation judgement value. The low fluctuation judgement value can be determined in advance. In step **162**, when the magnitude of the fluctuation is less than a predetermined low fluctuation judgement value, the control proceeds to step **163**. In this case, judgement in which the fluctuation is very small can be made.

[0155] In step **163**, the abutment judgement value update part **58***b* performs a control to decrease the abutment judgement value set in the operation program. In other words, the abutment judgement value update part **58***b* performs a control to narrow a tolerance range in which judgement is made. When the abutment judgement value is set by the increase amount of the electric current of the electrode drive motor, a control to decrease a judgement value of the increase amount of the electric current which is set is performed. For example, the abutment judgement value update part **58***b* controls to decrease the abutment judgement value to a predetermined value. Alternatively, the abutment judgement value update part **58***b* can performs a control to update the current abutment judgement value set in the operation program to the abutment judgement value from which a predetermined value is subtracted. In step **162**, when the magnitude of the fluctuation is not less than the low fluctuation judgement value, the control proceeds to step **164**.

[0156] In step **164**, the abutment judgement value judgement part **57***b* judges whether or not the magnitude of the fluctuation is greater than a predetermined high fluctuation judgement value. The high fluctuation judgement value can be determined in advance. In step **164**, when the magnitude of the fluctuation is greater than the high fluctuation judgement value, the control proceeds to step **165**.

[0157] In step **165**, the abutment judgement value update part **58***b* performs a control to increase the abutment judgement value set in the operation program. In other words, the abutment judgement value update part **58***b* performs a control to widen a tolerance range in which judgement is made. For example, the abutment judgement value update part **58***b* performs a control to increase the abutment judgement value to a predetermined value. Alternatively, the abutment judgement value update part **58***b* can performs a control to update the current abutment judgement value set in the operation program to the abutment judgement value to which a predetermined value is added.

[0158] In step **164**, when the magnitude of the fluctuation is not more than the high fluctuation judgement value, judgement in which the magnitude of the fluctuation is not too great and further not too little can be made. In this case, the control of updating the abutment judgement value is terminated.

[0159] The controls of updating the movement speed of the movable electrode and the abutment judgement value according to the present embodiment can be performed at the same time. In addition, as described in the second embodiment, when the robot is driven in place of the movable electrode, the state value of the robot drive motor and the abutment judgement value can be used in place of the state value of the electrode drive motor and the abutment judgement value.

[0160] The other configuration, operations, and effects are similar to the first and second embodiments and thus description will not be repeated here.

[0161] The spot welding system of the present invention can set a parameter for detecting a position of a workpiece with respect to each welding point in a control to detect the position of the workpiece.

[0162] In each control as described above, the order of steps can be appropriately changed within a range in which functions and operations are not changed. Further, the embodiments as described above can be appropriately combined.

[0163] In each drawing as described above, the same or similar components are assigned the same reference signs. Note that the embodiments as described above are illustrative and are not to limit the invention. Moreover, the embodiments include modifications of the embodiments recited in the claims.

1. A spot welding system comprising:
- a spot welding gun including a pair of electrodes disposed so as to be opposed to each other;
- a robot which changes a relative position of the spot welding gun and a workpiece so that the workpiece is disposed between the pair of electrodes; and
- a control device which controls the spot welding gun and the robot, wherein
- the robot includes a robot position detector for detecting a position and a posture of the robot,
- the spot welding gun includes a movable electrode which can move, an opposite electrode which is opposed to the movable electrode, an electrode drive motor which drives the movable electrode, and an electrode position detector for detecting a position of the movable electrode,
- the control device includes a storage part which stores an operation program and is formed so as to be capable of detecting a state value of the electrode drive motor including an electric current, a torque, or a number of rotations of the electrode drive motor, and further, drives the movable electrode and is formed so as to perform a position detection control which detects a position of the workpiece based on the position of the movable electrode when the state value of the electrode drive motor deviates from a predetermined range,
- a plurality of welding points are set in the operation program and the operation program includes a workpiece detection parameter for performing the position detection control,
- the workpiece detection parameter is set at each welding point, and
- the control device performs the position detection control based on the workpiece detection parameter obtained from the operation program with respect to each welding point.

2. The spot welding system according to claim **1**, wherein the workpiece detection parameter is associated with a welding instruction at the plurality of welding points.